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Socialization of lying scale: development and validation of a parent measure of socialization of truth and lie-telling behavior

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ABSTRACT

This study focused on the development of the Socialization of Lying scale for which exploratory factor analysis demonstrated four empirically interpretable subscales: Parents' Values and Direct Socialization about Honesty, Encouragement and Modeling of Lying, Consequences for Lying, and The Child's Problematic Lying. These emergent factors suggest that parents teach and give messages about honesty in explicit and implicit ways that may map onto the different domains in which they socialize the behavior. Future research should focus on further validation and revision of items. This measure can serve as tool for researchers to examine the influence of parent values and socialization practices on children's truth and lie-telling behavior.

Across societies, honesty is a desired and expected behavior valued above dishonesty (Bok, 1978). There is a general social expectation that individuals will be truthful in conversations (Grice, 1980; Lee, 2013). Yet, the paradox of lying is that many people nevertheless lie in day-to-day interactions (DePaulo & Kashy, 1998; Serota et al., 2010). Indeed, lying is a social strategy commonly used to manage interpersonal relationships and to achieve one's goals, such as avoiding negative consequences to oneself or for personal gain. Recent societal trends show an increase in lie-telling or "*fake news*" in politics, industry, and social media as well (Gerlach et al., 2019). Children are not only exposed to such forms of dishonesty, they also receive mixed messages about the value of honesty from parents (Lavoie et al., 2016), who strongly discourage lying, yet who, at times, also lie to them (Heyman et al., 2009; 2013). To further confuse the situation, parents, at times, also explicitly encourage children's lying to conform to social-conventional rules of politeness (e.g., after receiving an undesirable gift) or due to conflicting moral concerns of harm to another's feelings or interests.

Overall, this highlights that parents play a major role in children's moral development, yet few studies have examined systematically parent socialization of children's truth and lie-telling. The current study aimed to measure parents' values and attitudes toward honesty and how they socialize their children about truth-telling and lying through the development of the Socialization of Lying scale. In addition, once the scale was developed, we completed a convergent analysis comparing the Socialization of Lying factor subscales to children's actual lying behavior in two empirically-validated paradigms, as well as parents' perceptions of their children's lying behavior. This convergent analysis compared our Socialization of Lying measure to laboratory-based and parent-report measures of children's lying behavior to assess the cohesiveness and validity of the scale in relation to children's actual lie-telling behaviors.

Children's lie-telling ability

Children's ability to tell lies emerges in the preschool years and develops with age as their cognitive skills develop. In particular, numerous studies show that children's lie-telling abilities are related to their increasing Theory-of-Mind and Executive Functioning skills, from early childhood through mid-adolescence (e.g., Alloway et al., 2015; Evans & Lee, 2011; Talwar & Lee, 2008; Talwar et al., 2017). Children's ability to

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distinguish between truth and lies similarly emerges in the preschool years, beginning with a rudimentary understanding of truth as good and lies as bad (e.g., Bussey, 1992; 1999; Siegal & Peterson, 1998). As children age and mature into middle childhood and adolescence, a more nuanced understanding evolves, as children take intention and context into account as well (e.g., sarcasm and false beliefs are not lies; "white lies" told in politeness contexts are more acceptable than lies for personal gain; Broomfield et al., 2002; Popliger et al., 2011; Rothermich et al., 2020). Thus, reflecting increasing cognitive skills, lie-telling ability emerges early in childhood and continues to develop through childhood and adolescence, all the while changing in terms of the types of motivations for lying, frequency of lying, and sophistication of lying (e.g., Lavoie et al., 2017; Talwar et al., 2019; Talwar & Crossman, 2011).

While researchers have given considerable attention to cognitive aspects of children's lie-telling, less attention has been paid to the process of socializing the use of those abilities in social contexts. This lack of attention comes despite the fact that parents, teachers, and clinicians report that lying is an undesirable behavior of concern to them (Gervais et al., 2000; Stouthamer-Loeber, 1986; Warr, 2007). Strong empirical (e.g., Kochanska et al., 2004) and theoretical (Bandura, 1977; Baumrind, 1971; Grusec & Davidov, 2010) evidence suggests that the foundation of moral behavior is partly laid in the family through teaching and modeling by parents. Although the role of parents is acknowledged (Talwar & Crossman, 2011), how they contribute to the development of children's honesty has yet to be clearly delineated.

Theoretical framework for socialization of children's honesty and lie-telling

One theoretical approach that could account for the ways in which socialization impacts children's lie-telling is the domain-specific theory of socialization (Grusec & Davidov, 2010). Although this theory focuses on how parents socialize children broadly and provides insights on how children's behavior is socialized in general, it is nevertheless possible to draw parallels to how parents may socialize lying behavior specifically according to domain. Based on this theory, the process of socializing children can occur within five over-arching domains: control, guided learning, group participation, protection, and reciprocity (Grusec & Davidov, 2010; Grusec et al., 2017). In the control domain, parents seek to elicit compliance from their children to develop self control and the internalization of values and societal norms (Grusec, 2017; Grusec et al., 2017). In the guided learning domain, parents and children create a shared understanding of knowledge or skills (Grusec, 2017). In the group participation domain, parents expose their children to and engage them in rituals, routines, and appropriate behaviors so that children learn to behave in conformity to group norms, and acquire stable behavioral standards (Grusec, 2011, 2017; Grusec & Davidov, 2010). In the protection domain, parents alleviate their children's distress and respond to them in a way that they find comforting (Grusec, 2011; Grusec & Davidov, 2010). In the reciprocity domain, parents elicit compliance from their children by complying with their children's requests and sharing positive affect with them (Grusec, 2011; Grusec & Davidov, 2010). The authors posit that socialization influences on child development might operate in domain-specific ways, such that seemingly similar child behaviors might be socialized through different domains and are not necessarily equivalent.

For example, the control domain involves parental discipline (i.e., control strategies) intended to instill self-control in children and allow them to do the right thing. Children's moral behavior is thought to be an outcome of socialization in this domain. The amount of parent control used must be sufficient to produce a desired behavior, but not so forceful that it undermines internalization (Bugental & Grusec, 2006; Deci & Ryan, 1985) or reduces children's opportunity to learn about others' perspectives (Pears & Moses, 2003). In the case of lying, in theory, children would learn through parental discipline not to use the social strategy of lying. Instead, they would be reinforced for honesty, leading them to develop their own value of honesty and use self-control to desist from deceitfulness in the future.

However, based on empirical findings of children's lying, we know that although children learn to value honesty and recommend it to others, they still lie to escape negative consequences (Talwar & Lee, 2002; 2008). Furthermore, parents may not always punish lying, and in some cases encourage lying and even model it themselves to their children (Heyman et al., 2009; Lavoie et al., 2016). As a result, other domains, as outlined by Grusec and Davidov, may also be relevant to parents' socialization of children's honesty.

For parents' socialization of children's honesty, the explicit knowledge transfer that is posited to occur in the guided learning and group participation domains may be particularly important. In the guided learning

domain, parents scaffold their teaching within the child's zone of proximal development and adjust their guidance to the child's changing skill level and understanding. Although cognitive outcomes are often associated with this type of socialization, it might also be used with social-emotional skills (Gottman et al., 1996), including moral and character education (Turner & Berkowitz, 2005). Parents' guidance to children regarding honesty may be scaffolded according to children's ability to understand moral teachings, their understanding of emotions, including the appropriate expression of these emotions, and strategies for managing them, as well as their increasing cognitive skills to understand the perspective of others. In this domain, it is possible that parents provide scaffolding to teach children how to successfully apply the rule of honesty in their day-to-day interactions and, perhaps, when not to apply it (i.e., in a prosocial situation to protect another's feelings). In contrast, for the group participation domain, through which children learn the social customs and cultural practices of the social group to which they belong, socialization about lying might be less direct. Socialization in this domain may occur through social learning or by inclusion in group practices. In this way, observing parents' truth and lie-telling can teach children about honesty and the degree to which it is acceptable to lie across varied social interactions.

The protection and reciprocity domains likely have less influence on children's truth and lie-telling, although the reciprocity domain may play a greater role for adolescents. In this domain, caregiver co-operation with a child's reasonable demands creates conditions whereby children co-operate in turn. With adolescents, where there is a sense of reciprocity and trust in the parent-child relationship, they may be more willing to disclose (thus less likely to conceal) personal information that they feel parents would disapprove of or that they consider within the realm of their own autonomy, beyond appropriate parental control (e.g., Darling et al., 2006).

Overall, then, Grusec and Davidov (2010) domain-specific theory of parental socialization provides a sound theoretical framework for exploring and measuring parents' direct and indirect methods of socializing the value of honesty and appropriateness of lying.

Empirical support

Given the framework above, it is encouraging that existing empirical research supports the proposition that parents socialize children about lies and truth-telling in both direct and indirect ways (e.g., Heyman et al., 2009; Lavoie et al., 2016; Ma et al., 2015). However, only a handful of studies to date have examined parental socialization of lying.

First, there is support for guided learning about truth- and lie-telling. The majority of parents explicitly teach their children that lies are not acceptable (Heyman et al., 2009; Lavoie et al., 2016), and many parents explicitly disapprove of or punish children's lies (Lavoie et al., 2016). Heyman et al. (2009) found that 74% of parents taught their children that lying was never acceptable and parents "strongly" encouraged their children to be honest. Yet, 88% also indicated they had lied to their child at least once and that it was acceptable under certain circumstances. In another study, Heyman and colleagues (2013) found that the majority of parents from US and China reported using instrumental lying (e.g., falsely lying about leaving the child alone in public if they did not follow the parent) to achieve their child's behavioral compliance. Lavoie et al. (2016) found that while many Canadian parents reported teaching their children that lying was never acceptable, they also indicated that telling a lie themselves was sometimes acceptable. Moreover, children whose parents taught that lying was sometimes acceptable were more likely to tell lies. This reflects the mixed messages that children receive about honesty. On one hand, children receive strong explicit messages about the importance of honesty and disapprobation of lying. On the other hand, they may observe parents' and other adults' dishonesty, implicitly or explicitly sending the more relativist message that lying is acceptable in some situations, and suggesting the potential role of the group participation domain in the socialization of lying.

Other studies have examined the role of parenting style in children's lying (e.g., Lavoie et al., 2016; Ma et al., 2015; Popliger et al., 2011; Talwar et al., 2017), supporting the relevance of the control domain in Grusec and Davidov (2010) domain-specific theory of parent socialization. For instance, Ma et al. (2015) found that parenting control led to less lying in preschool children. However, parents' use of control may lead to different outcomes in terms of lying and truth-telling in different social contexts. Popliger et al. (2011) found that children 3 to 11 years of age with authoritative parents were more likely to tell prosocial lies, whereas Talwar et al. (2017) found that authoritative parenting may lead to less antisocial lying. In addition, age could moderate the impact of control, with adolescents more likely to lie when they perceive

their parents as controlling (e.g., Bureau & Mageau, 2014; Jensen et al., 2004). This again points to the potential importance of domain specificity in understanding the nuanced role of parent socialization in children's developing truth and lie-telling behaviors.

Current study

While parents play a critical, foundational role in children's development, little is known about their role in the development of children's honesty and dishonesty. Few systematic methods are available to measure how parents socialize children around their values about honesty and lying. As such, it is important to have a clear conceptualization and theory-driven and psychometrically sound measurement of this construct that can be used with parents to better understand how they socialize their children about truth- and lie-telling. Examining parent socialization of honesty/lying as it is conceptualized and measured will add to growing knowledge of the ways children's lying and honesty are fostered and, in general, how honesty is affected by developmental and social factors. The purpose of this study was to design, develop, and test the validity and reliability of a multidimensional measure of parental socialization of lying and honesty, the Socialization of Lying (SoL) Scale.

As there were no prior measures examining parents' values about and socialization of lying, we started with an inductive process, piloting an open-ended questionnaire (see Lavoie et al., 2016), and developing responses into a quantitative version. Here, we report on the development of the SoL scale based upon a prior pilot study, test its factor structure, explore internal-consistency reliability, and provide the initial evidence of construct validity. In developing the measure, we included parents of children ages 6-14 years in our initial development sample and parents of slightly younger children, ages 3-12 years, in our validation sample. Generally speaking, by ages 6-14 years, children's lie-telling behavior has emerged, and so we anticipated that parent responses would reflect some stability of practices regarding lying behavior but still capture micro-level age related socialization differences. However, to extend this range, we included parents of preschool children in our convergent analyses sample to assess the structure of the Socialization of Lying questionnaire in relation to children's earlier, emerging lying behavior.

Based upon the theoretical framework of Grusec and Davidov (2010), we expected that factors would reflect both direct and indirect methods for socializing children about lying, as well as parent attitudes toward lying and children's lying behavior. Finally, we also included two independent measures of children's actual lie-telling behavior, from an experimental situation and via parent report, in order to examine convergent measures of lying behavior.

Study 1: exploratory factor analysis

Based upon our previous pilot study, we created a Socialization of Lying scale with 27 items (item development described below). We tested these items with an exploratory factor analysis in the present study. The goal was to refine the Socialization of Lying Scale item pool, test factor structure, and explore internal-consistency reliability.

Method

Participants

A total of 307 parents, predominantly mothers (estimated 90% mothers based on an earlier study), of school-age children (target child ages 6-14, $M = 10.30$ years, $SD = 2.04$ years, 49% female) from a large diverse metropolitan area in North America participated in the study. Parents who had more than one child were asked to respond to the study questions based on their parenting of the target child only. Parents provided nationality or ethnicity information in response to an open-ended prompt ("To which ethnic or cultural group(s) does your child belong to"), and across participants, more than 50 backgrounds were listed, some identifying more with an ethnicity, others with a nationality, others with a language group, and others with a religious orientation. Given that these were participants' own self-identified responses, we provide aggregate data of the largest categories: 20% self-identified as Caucasian (3% of these used the term White), 13% self-identified as being of Canadian nationality without further specifications, 11% self-identified as being of Jewish heritage without further specifications. Parents had a variety of educational backgrounds, with the most common categories of 'highest level of education' being undergraduate degree (30%), Master's degree (18%), college diploma (17%), and doctorate (17%). Annual household incomes (in Canadian dollars) were most commonly in the mid-high range in comparison to median household incomes across the city; 41% reported a household income of $90,000 or higher, 31% reported a household income of $60-75,000, and 10% reported a household income of $45-60,000.

Table 1. Study 1 item descriptives.

Item	M (SD)
I think that lying can be acceptable in some situations.	2.83 (0.81)
I am comfortable with the thought that my child might tell some lies.	2.44 (0.94)
I find that my child's lie-telling is a problematic behavior relative to other children.	1.52 (0.87)
I think that lying is never acceptable.	2.30 (0.92)
I teach my child that lying is acceptable in some situations.	2.30 (1.02)
I do not think my child is ready to understand the concept of good lies and bad lies.	1.90 (1.0)
I tell my child that there will be consequences if s/he lies.	3.49 (0.68)
I teach my child that lying is never acceptable.	2.73 (0.98)
I teach my child to always tell me the truth.	3.73 (0.53)
I teach my child to always tell the truth to other adults.	3.34 (0.70)
I teach my child to always tell the truth to other children.	3.20 (0.70)
I plan to teach my child about the concept of good lies and bad lies when s/he is older.	3.13 (1.0)
I have caught my child lying in the past.	2.58 (0.70)
After I catch my child lying, I am likely to address his or her behavior directly by talking with him or her.	3.83 (0.48)
After I catch my child lying, I am likely to let it pass without saying anything.	1.52 (0.64)
After I catch my child lying, I am likely to assign consequences or punishment.	2.95 (0.77)
I have encouraged my child to lie to obtain material benefits (e.g., lying about child's age to get a reduced ticket price).	1.47 (0.74)
I have encouraged my child to tell a lie to protect others' feelings.	2.50 (0.88)
I have encouraged my child to tell a lie to be polite.	2.40 (0.90)
I have encouraged my child to tell a lie to conceal information that I do not want shared (e.g., lying about something that happened at home to keep the information private).	1.88 (0.88)
I tell lies to my child to obtain his or her compliance.	1.69 (0.76)
I tell playful lies to my child to conceal information that I do not want my child to know (e.g., about surprise events, Santa Clause).	2.74 (0.80)
I tell lies to my child to conceal personal or negative information that I do not want my child to know (e.g., world events, finances).	2.09 (0.82)
In the past, I have talked to my child about lying.	3.27 (0.67)
I am concerned about the frequency with which my child lies.	1.72 (0.87)
I tell lies to others in front of my child.	1.66 (0.64)
I teach my child that it is important to be truthful.	3.83 (0.41)

Materials

Socialization of lying questionnaire (SoL)

Parents completed a questionnaire developed to measure their own beliefs about the acceptability of lying, as well as what and how they teach their children about lying. The questionnaire began with the prompt, "Children learn about lying from many sources. This questionnaire asks you to rate the frequency with which you use certain behaviours, as well as how much you agree with certain statements." The questionnaire consisted of 27 items, chosen through an earlier pilot study, as described below (see Table 1). Item responses were on four-point Likert-type scales to indicate relative frequency (never to frequent) or agreement (strong disagreement to complete agreement). Response completion was high, with 0-2% missing responses across items.

Demographics questionnaire

Parents responded to a brief demographics questionnaire that asked about their child's age, gender, and ethnic background, highest level of education, and annual household income.

Procedure

Parents completed a demographics questionnaire and the socialization of lying questionnaire in the waiting room of a children's research center, while their child completed activities with a researcher (unrelated to the study).

Results

Item development

Items for the SoL questionnaire were developed from an earlier study during which parents ($N = 146$) answered a series of open-ended questions probing their thoughts about the acceptability of lying, what they teach their child about lying, and how they respond to their child's lying behavior (for more details on this study, see Lavoie et al. (2016). Based on a thematic coding analysis of parents' open-ended

responses (Braun & Clarke, 2006, discussed further in Lavoie et al., 2016), we selected 27 items from common parent responses to form a closed-ended version of the SoL questionnaire. Commonality was determined based on the content frequency of similar responses. Items were drawn from parent responses in an inductive process based on frequently-appearing themes within responses, and this method was used to ensure that parents' responses were well represented in the initial questionnaire draft, given that the target group for the questionnaire is parents.

To ensure cohesiveness of the items, we compared the items drawn from parents' open-ended responses to theoretical literature on parenting (e.g., domain-specific theory of socialization; Grusec & Davidov, 2010). We also compared the items to the existing handful of studies on parent socialization of children's lying behavior. We compared each item based on parent responses to the theoretical and empirical literature to ensure clarity and validity of the items, and all items were deemed suitable, or aligned with theoretical and empirical literature on socialization of lying. Items were then reviewed for content and phrasing in consultation with two senior experts in child development and deception. Consistent with parents' open-ended responses, items for the closed-ended version of the SoL questionnaire focused on (a) parents' own beliefs about the acceptability of lying, (b) parents' teaching to their children about the acceptability of lying, (c) methods parents use to teach or reinforce with their children the acceptability of lying, and (d) parents' views or concerns about their children's lying behavior.

Exploratory factor analysis

An exploratory factor analysis was conducted on parents' responses to the SoL questionnaire to identify underlying dimensions of a construct for use in evaluating different domains of parent socialization of lying and of children's lying behavior (principal factors). Sample sizes of 100-300 are generally recommended for conducting an exploratory factor analysis (Beavers et al., 2013; Hutcheson & Sofroniou, 1999; Suhr, 2006), with the strength of factor loadings within factors being used to confirm that a satisfactory sample size has been achieved (Fabrigar et al., 1999; Guadagnoli & Velicer, 1988; MacCallum et al., 2001). Specifically, for factors with low to moderate loadings, the higher range of the sample size is preferred, whereas the lower range of the sample size can be used when within-factor loadings are high, which suggests a strong and cohesive factor. Standard recommendations, without taking into consideration the data structure and factor loadings, are that 5-10 participants per item be included (e.g., Osborne et al., 2008; Wolf et al., 2013). We conducted the exploratory factor analysis with 307 respondents (27-item questionnaire), and confirmed that our factor loadings within factors were either strong (three of the four factors had three or more items with a factor loading of 0.59 or higher) or moderate (one factor had three items with a factor loading of 0.48 or higher), which suggests that even a low-to-mid range sample size would have been acceptable, and that our current sample was of sufficient size.

We selected the four-factor solution by retaining only factors whose Eigenvalue was 1 or higher (Beavers et al., 2013; Costello & Osborne, 2005) in conjunction with a visual inspection of the screeplot (Fabrigar et al., 1999), and we conducted a varimax rotation with Kaiser normalization to interpret the factor loadings. Two items were dropped based on having a factor loading below 0.3 (Beavers et al., 2013), and an additional two items were dropped based on low factor loadings (0.32 and 0.36 respectively) in conjunction with problematic interpretability. These latter two items reflected a potential developmental perspective on parents' socialization of lying, which may explain the problematic factor loadings in parent participants whose children's ages varied across developmental stages. A correlation analysis supported this hypothesis: child age was associated with the following statements, "I do not think my child is ready to understand the concept of good lies and bad lies" and "I plan to teach my child about the concept of good lies and bad lies when s/he is older," $p < .001$ and $p = .025$ respectively. Parents with older children did not agree that their child was not ready for distinguishing between good and bad lies and they did not agree that they would wait to teach their child this concept until their child was older. The factor loadings, as well as descriptive information for each factor, are presented in Tables 2 and 3.

We also explored a split sample approach to assess whether the factor structure differed substantially between parents of younger children (6-10 years) and parents of older children (11-14 years), to see whether we could replicate a strong four-factor structure in both groups. We found that a three-factor structure was more fitting for the data, and that two factors of the three were similar across the younger child and

Table 2. Study 1 factor loadings.

Factor	1	2	3	4
Factor 1: Parent values and direct socialization about honesty				
I think that lying can be acceptable in some situations.	−0.66			
I am comfortable with the thought that my child might tell some lies.	−0.60			
I think that lying is never acceptable.	0.71			
I teach my child that lying is acceptable in some situations.	−0.71	0.30		
I teach my child that lying is never acceptable.	0.75			
I teach my child to always tell me the truth.	0.45		0.33	
I teach my child to always tell the truth to other adults.	0.67			
I teach my child to always tell the truth to other children.	0.72			
Factor 2: Encouragement and Modeling of Lying				
I have encouraged my child to lie to obtain material benefits (e.g., lying about child's age to get a reduced ticket price).		0.47		
I have encouraged my child to tell a lie to protect others' feelings.	−0.50	0.61		
I have encouraged my child to tell a lie to be polite.	−0.50	0.64		
I have encouraged my child to tell a lie to conceal information that I do not want shared (e.g., lying about something that happened at home to keep the information private).		0.58		
I tell lies to my child to obtain his or her compliance.		0.62		
I tell playful lies to my child to conceal information that I do not want my child to know (e.g., about surprise events, Santa Clause).		0.49		
I tell lies to my child to conceal personal or negative information that I do not want my child to know (e.g., world events, finances).		0.65		
I tell lies to others in front of my child.		0.60		
Factor 3: Consequences for Lying				
I tell my child that there will be consequences if s/he lies.	0.37		0.49	
After I catch my child lying, I am likely to address his or her behavior directly by talking with him or her.			0.45	
After I catch my child lying, I am likely to assign consequences or punishment.			0.50	
In the past, I have talked to my child about lying.			0.48	
Factor 4: Child's Problematic Lying				
I find that my child's lie-telling is a problematic behavior relative to other children.				0.60
I have caught my child lying in the past.			0.30	0.59
I am concerned about the frequency with which my child lies.				0.68

Note: Factor loadings under 0.3 have been suppressed.

older child groups. The third factor for the younger child group represented parents' values about the acceptability of lying, both for their children and themselves. The third factor for the older child group was characterized by problematic lying and child readiness to understand the distinction between good versus bad lies. Hence, they did not differ with regard to parent-applied consequences for lying (i.e., control domain), nevertheless the remaining factors may have slightly different salience depending on child age. However, given the intent to create a questionnaire for parents of children from the early emergence of lying (2 or 3 years old; Williams et al., 2017) to 18 years of age, we opted to maintain the full sample for subsequent analyses. This approach also maintained stronger power for the analysis and yielded more meaningful results in terms of factor cohesiveness and interpretability, while retaining the four factors that represent lie socialization across ages.

Factor description

Four SoL factors were retained based on item factor loadings and interpretability (see Tables 2 and 3). Factor 1 (8 items) concerns parents' values and direct socialization about honesty and lying. Items ask parents about their own views on the acceptability of lying, as well as what they teach their children about the acceptability of lying. This factor reflects direct teaching about lying, and higher scores suggest a higher parent value and teaching of honesty in all situations, whereas lower values suggest that the parent thinks and teaches that lying can be acceptable in some situations.

Factor 2 (8 items) encompasses parents' encouragement and modeling of lying behavior. Items ask parents to indicate whether they have told certain types of lies in front of their children or whether they have encouraged their children to tell certain types of lies in specific scenarios. Higher scores suggest that

Table 3. Study 1 descriptive information by factor.

	No. of Items	Eigenvalue	Variance %	Range	Skew	Kurtosis	Cronbach's α
1. Parent Values and Direct Socialization About Honesty	8	6.57	57	1.25 to 4	−.001	−.61	.89
2. Encouragement and Modeling of Lying	8	2.09	18	1 to 3.5	.16	−.39	.83
3. Consequences for Lying	4	1.26	11	1.5 to 4	−.87	1.04	.59
4. Child's Problematic Lying	3	1.05	9	1 to 4	1.04	.77	.71

the parent has modeled lying behavior in front of their child or has encouraged their child to tell specific types of lies. This factor reflects indirect teaching of lying behavior.

Factor 3 (4 items) reflects parent-applied consequences for children's lying behavior and asks parents to indicate whether they use specific types of consequences in relation to their children's lying (parents' verbal teaching and parents' actions). This factor reflects the follow up methods that parents use to reinforce their teaching about honesty and lying. Higher scores suggest a higher application of consequences for children's lying behavior, reflecting parental influence in the control domain.

Factor 4 (3 items) probes children's problematic lying behavior, asking parents whether their children's lying is of concern. Higher scores suggest the child's lying behavior is more problematic.

Study 1: discussion

In this study, we performed a exploratory factor analysis to examine the factor structure of the newly created Socialization of Lying scale. The exploratory factor analysis resulted in a 23-item scale with four distinct and interpretable subscales. Overall, the scale factors cumulatively accounted for 95% of the variance within the construct. The four subscales were (1) Parent Values and Direct Socialization About Honesty, (2) Encouragement and Modeling of Lying, (3) Consequences for Lying, and (4) Child's Problematic Lying. Next we conducted convergent validity analyses.

Study 2: convergent validity

In Study 2, we sought to assess whether parent responses on the Socialization of Lying scale corresponded to their child's own lying behavior (TRP and DGP), as well as their perceptions of their child's lying behavior (CBCL item 43 "cheats and lies"). We also explored whether child age was associated with parents' socialization methods.

Given the lack of convergent validated measures on socialization of lying (none to our knowledge), we opted to test whether any of the SoL scale factors would be predictive of children's actual lying behavior. Although much of the questionnaire reflected parent values and parenting strategies for socializing about lying behavior, we did include several questions about the child's lying behavior. These questions address whether a parent believes that their child lies and whether they perceive their child's lying behavior to be a problem, as this could be related to how they parent their child, given the bidirectionality between parenting-child behaviors (Shaffer et al., 2013).

Method

Participants

We used a subsample of responses from parent and child participants in a large study on children's lying behavior ($N = 124$, child age range 3-12 years, $M = 6.85$ years, $SD = 2.75$ years) to examine whether parent responses on the SoL questionnaire corresponded to children's actual lying behavior in an experimental setting. This sample was a second, separate sample from the original sample above.

As in Study 1, parents provided nationality or ethnicity in response to an open-ended prompt ("To which ethnic or cultural group(s) does your child belong to"), and across participants, more than 30 backgrounds were listed, some identifying more with an ethnicity, others with a nationality, others with a language group, and others with a religious orientation. Given that these were participants' own self-identified responses, we provide aggregate data of the largest categories: 31% self-identified as Caucasian (8% of these used the term White), 11% self-identified as being of Jewish heritage without further specifications, and 8% self-identified as being of Canadian nationality without further specifications. Parents had a variety of educational backgrounds, with the most common categories of 'highest level of education' being undergraduate degree (50%), Master's degree (17%), and doctorate (13%). Annual household incomes (in Canadian dollars) were most commonly in the mid-high range in comparison to median household incomes across the city; 55% reported a household income of $90,000 or higher, 11% reported a household income of $75-90,000, and 11% reported a household income of $60-75,000.

Table 4. Study 2 factor intercorrelations and correlations with convergent measures.

Factor #	*M* (*SD*)	Range	Skew	Kurtosis	α	2	3	4	5 TRP	6 DGP	7 CBCL
1.	2.65 (.59)	1.5 to 4	0.46	−0.38	0.87	−.349**	.323**	.092	−.020	−.051	−.078
2.	2.13 (.52)	1 to 1.38	0.03	−0.53	0.82		.195*	.027	−.018	−.042	.026
3.	3.20 (.51)	1 to 4	−0.82	0.84	0.63			.172	−.008	−.043	.168
4.	2.02 (.62)	1 to 4	0.79	0.12	0.66				.185*	−.013	.522**

Note: TRP, Temptation Resistance Paradigm; DGP, Disappointing Gift Paradigm; CBCL, Child Behavior Checklist.
*$p < .05$.
**$p < .001$.

Procedure

In order to examine convergent validity, children completed tasks to measure actual lie-telling behavior. Child were given the Temptation Resistance Lie Paradigm (TRP; for more description, please see Talwar & Lee, 2008). In this task, children have the opportunity to peek to determine the correct response in a game while the researcher is not looking and then lie/tell the truth about whether they peeked (lie to conceal a transgression). Children also participated in the Disappointing Gift Paradigm. In this task, children are given a disappointing prize as a gift and asked if they like it (DGP, for more description please see Talwar et al., 2007; polite lie). Parents also completed the SoL questionnaire and parents of children ages 6-18 years completed the Child Behavior Checklist for children 6-18 (parents completed all items, but only item 43 "cheats and lies" was used for this convergent analysis).

Results

Overall, we found that the scale performed similarly in this smaller sample of parents, with differences in the Cronbach's alpha for each Factor at 0.05 or less. Additional descriptive information on each Factor is available in Table 4.

Child age differences

With regard to age differences, we found that SoL Factor 2: Encouragement and Modeling of Lying and SoL Factor 3: Consequences for Lying were positively correlated with children's age, $r(N = 124) = .286$, $p = .001$, and $r(N = 124) = .280$, $p = .002$ respectively (using a mean sum score for each factor). These correlations suggest that parents were both more likely to encourage and model lying behavior for their children and to assign consequences to their children for lying with increasing child age (see Table 4 for correlations).

Child lying behavior

In the sample of peekers (i.e., subset of children who peeked in the TRP task and thus had motivation to lie to conceal that behavior, $n = 46$), SoL Factor 4: Problem Lying was predictive of a greater likelihood of telling a lie in the TRP, $b = 2.46$, $SE = 1.22$, $p = .045$, $OR = 11.69$ [95% CI 1.06, 128.72], binary logistic regression model, $\chi^2(4, N = 46) = 9.52$, $p = .049$). No other factor predicted lying in the TRP. We also examined whether parent socialization factors were associated with children's lying in the DGP using a binary logistic regression, but the model was not significant, $\chi^2(4, N = 120) = 0.32$, $p = .989$, thus none of the SoL factors predicted children's polite lying behavior.

Problem lying and the CBCL lying item

Seventy-three parents completed the Child Behavior Checklist (6-18 year version; Achenbach, 1999) and question #43 "lying or cheating" was positively correlated with SoL Factor 4: Problematic Lying, $r(N = 73) = .522$, $p < .00$. Thus, as expected, higher parent-reported problematic lying on the SoL questionnaire was associated with higher parent endorsement of the item "lying or cheating" on the CBCL.

Study 2 discussion

The aim of our second study was to examine convergent validity of the Socialization of Lying Questionnaire in a sample of parent-child dyads, to assess parent values about honesty and lying in relation to their child's lying behavior. We found that parents' perspectives about their child's problematic lying (Factor 4) was associated with problematic lying and cheating as measured by the CBCL. We also found that children's lying during the TRP was associated with parents' perceptions of their child's problematic lying on the Socialization of Lying Questionnaire (Factor 4). We discuss our results further below.

General discussion

The Socialization of Lying scale was developed to measure parents' values and how they socialize their children about honesty and lying. An exploratory factor analysis revealed items that clustered together to create four interpretable factors. These emergent factors suggest that parents teach and give messages about honesty in explicit and implicit ways that may map onto the different domains in which they socialize the behavior. They also may help explain the discrepancies that are found between children's developing understanding of the 'morality' around truths and lies, and their actual lie-telling behavior. While children rate lying as bad and telling the truth as desirable behavior, they nevertheless may still tell lies for a variety of reasons, as do many adults (Talwar et al., 2002).

The first factor was *Parent Values and Direct Socialization about Honesty*. Consistent with our expectation that parents' values and teaching would be significant, these items loaded on one factor that represents direct teaching about the value of honesty and the unacceptability of lying. It is congruent with findings that parents value honesty as an important behavior and explicitly teach their children about the value of honesty (Lavoie et al., 2016). Thus, this factor appears to represent a direct method of socialization. In this regard, it is in line with Grusec and Davidov's guided learning domain – children learn to be *honest* through direct teachings and messages they receive about the value of honesty from parents (Talwar et al., 2015).

At the same time, the second factor, *Encouragement and Modeling of Lying,* included parents encouraging their children to tell lies as well as parents modeling lying in different motivational contexts. Parents coaching and modeling of lying behavior represent both direct and indirect methods of socializing lying behavior, reflecting both the guided learning and group participation domains. Both encouraging lying and children's observation of another's lying behavior teaches them about the *appropriateness of lying* in different contexts and encourages them to use the strategy in similar contexts (Engarhos et al., 2020; Hays & Carver, 2014).

We further found that parents were more likely to encourage and model lying with increasing child age, which is in keeping with the findings of past studies that suggest that the types of lies that children tell change from early childhood into adolescence (Lavoie et al., 2017). This may somewhat reflect parental recognition of children's growing cognitive ability to differentiate and comprehend greater nuance in lie-telling situations. Indeed, younger children's understanding of lies is rigid and lacks nuance and prosocial lies, which tend to be selfless and/or altruistic in motivation, are less common at younger ages (Bussey, 1992, 1999; Siegal & Peterson, 1998). Children tell such lies increasingly around middle childhood (Popliger et al., 2011). In contrast, older children and adolescents' abilities to empathize and understand the feelings and perspectives of others, leads to more nuanced understanding of lying behavior where another's feelings may be preserved (Xu et al., 2010). While this change in lying behavior has been documented, the current study suggests that this developmental shift seen in older children and adolescents may, in part, be due to active encouragement from parents.

The third factor was *Consequences for Lying* and included items that reflect the control domain of parent socialization. Items in this factor relate to the sanctions and inductive techniques used by parents in reaction to their children's dishonesty, giving children direct feedback and sometimes punishment to *discourage lying* behavior. This factor seems to reflect parents' increasing efforts with age to deter lying, especially lying for self-oriented reasons (e.g., to escape consequences) or perhaps in response to older children and adolescents' lies to maintain autonomy over personal choices (Darling et al., 2006). Parents were more likely to assign consequences for lying with increasing child age, which suggests that parents may view lying more negatively as their child ages. Specifically, parents may have the expectation that as their child ages and matures, they should not be telling lies. Parents may see lie-telling in young children as undesirable, but not very serious since younger children may not understand lying, while children ought to 'know better' as they get older (Talwar & Crossman, 2011). Indeed, children become better liars with age, highlighting the importance of honesty and trust between parents and adolescents, particularly because stakes can often be higher with older children and adolescents. Because of this, parents may attribute fewer consequences for lying when their children are young, but may increasingly impose consequences to discourage lying as their children get older.

Finally, the fourth factor was *Child's Problematic Lying*, which assessed parents' views and concerns about their children's lying behavior. These items were derived from the initial open-ended Socialization of Lying questionnaire, as parent responses suggested that perceptions of their children's actual lying

behavior were pertinent to how they socialized them about lying. Overall, this factor contributes to the conceptual cohesiveness of the Socialization of Lying questionnaire as it connects parents' perceptions about the acceptability of lying to perceptions of their child's actual lying behavior. Previous studies have found that parenting approaches (Ma et al., 2015; Talwar et al., 2017), socialization methods (Lavoie et al., 2016) and adult modeling of lying (Hays & Carver, 2014), are correlated with children's actual lying. Yet here, the Child's Problematic Lying Subscale was not correlated with the other socialization subscales, raising questions about the impact of parents' self-reported socialization practices on children's actual lie-telling decisions across contexts. Nevertheless, it was correlated with parents' reports of problematic lying and with children's actual lie-telling in an experimental context, results that might eventually help to build more nuanced understanding of the impact of socialization on children's lying tendencies. This factor may reflect parent perceptions of the success of their socialization efforts across domains, but particularly regarding social norms about acceptable amounts and contexts for lying.

Overall, Grusec and Davidov (2010) domain-specific theory of parental socialization provided a theoretical framework for exploring and measuring parents' direct and indirect methods of socializing the value of honesty and appropriateness of lying. As expected, the guided learning, group participation and control domains were reflected in parents' attitudes and messages about truth-telling and lying. The Parent Values and Direct Socialization about Honesty subscale reflected guided learning theory. This likely reflects discussions parents have with their children about honesty to develop children's knowledge about the importance of honesty and to increase their truth-telling behavior. This domain, as well as the group participation domain, was partially reflected in the Encouragement and Modeling of Lying subscale. This reflects parent behaviors that actively encourage and model lying to their children and is consistent with reports that parents offer mixed socialization messages about the acceptability and appropriateness of lie-telling (Lavoie et al., 2016; Heyman et al., 2009, 2013). The control domain was reflected in the third subscale, Consequences for Lying, where parents directly try to influence children's behavior and curb their lying, increasingly with child age. Finally, the Child's Problematic Lying subscale likely reflects parents' perceptions of the *outcome* of their socialization efforts, particularly with regard to group participation. That is, when children's lie-telling violates social norms around its acceptable use, parents may perceive it to be problematic. However, as expected, the domains of protection and reciprocity were not reflected in our scale. The oldest children in our samples were 14 years of age, and it is possible that these domains do not yet impact parent-child interactions related to honesty and lie-telling. As children gain autonomy, engage in more risky behaviors, and evolve into skilled liars, it is possible they may play a greater role in adolescents' socialization.

Overall, the SoL subscales showed adequate reliability estimates on three of the subscales (Nunnally, 1978), with one subscale falling short of the .70 suggested standard. Two subscales, Parents' Values and Direct Socialization about Honesty and Encouragement and Modeling of Lying, had very good Cronbach's alphas, which combined with strong factor loadings and clear interpretability suggest a strong measurement within each subscale. The Child's Problematic Lying also had an acceptable level of reliability. The Consequences for Lying had lower reliability than the other three subscales, which may be due to the nature of the items in this subscale. Two of the items could be considered proactive consequences ("I tell my child that there will be consequences if s/he lies" and "In the past, I have talked to my child about lying"), whereas the remaining two items could be considered more reactive consequences (both begin with "After I catch my child lying"). Although the four items form a unidimensional construct, the distinction between proactive and reactive consequences may contribute to a lower overall reliability across the items. It is also possible that it is more challenging to capture consistent parental disciplinary methods regarding children's lying behavior with high reliability. Child age, for instance, could inject variability in parents' responses and was significantly correlated with scores on this subscale. Lavoie et al. (2016) found that the ways parents socialized their children were not always consistent and were somewhat reflective of children's ages as well. This could also highlight a wider challenge in measuring parental disciplinary approaches, as other parenting scales and subscales, such as the Parent-Child Conflict Tactics Scale (CTSPC), have similar challenges with lower reliability scores (Straus et al., 1998).

In the present study, we also included measures to assess convergent validity, specifically of children's own lying behavior, given the dearth of measures available to assess convergence in parents' values and socialization about lying (to our knowledge, there are

no validated measures). We had convergent evidence for a sub-sample of children with problematic lie-telling behaviors, between their lying in the Temptation Resistance paradigm and parents' responses on the SoL. Specifically, parents' views of their children's problematic lying were predictive of children's actual lie-telling behavior to conceal their transgressions in an experimental context. It was also predictive of parental endorsement of children's problematic lying on the CBCL. In contrast, it was not predictive of children's prosocial lying behavior as measured by the experimental Disappointing Gift paradigm. This makes conceptual sense, as the Disappointing Gift paradigm elicits lies that are thought to reflect socially acceptable, prosocial motivations (Talwar et al., 2007). Overall, these convergent findings are encouraging because they suggest the Problematic Lying subscale is a robust and specific predictor of actual problematic lying and not of prosocial lying, which is generally not considered problematic. Thus, it appears that the problematic lying subscale captures parents' concerns about their children's antisocial, self-serving lies and may discriminate between lying that causes harm to social relations from more prosocial, other-oriented lying. While this is promising, future research is needed to examine convergent and divergent validity with a range of parent and child measures for the SoL.

Limitations and future directions

Further development and refinement is needed on the Socialization of Lying Scale. Exploratory Factor Analysis is the first crucial step in scale development, but it is important to further investigate and confirm the factor structure of the SoL Scale using Confirmatory Factor Analysis. This will help to establish the scale's factorial validity and inform future revisions to the items that may threaten its dimensionality (Netemeyer et al., 2003). Furthermore, this study had a relatively homogenous sample and future research is needed with a more diverse sample from different cultures to examine the generalizability of the current factor structure and to better understand how these factors are perceived across cultures and among a more diverse sample. Age differences, including the salience of different aspects of socialization and their relevant domains, require further probing as well to better elucidate developmental issues in the socialization of lying. Once there is further evidence on the reliability and validity of the scale, further convergent validity with measures of parent and child behaviors should be explored. Our convergent measures were measures of children's lying behavior, and correspond to the Child Problematic Lying subscale, but further diversity of measures that capture both broader parenting values and methods of socialization are also needed. More research will be needed as new measures become available to test convergence with the SoL subscales.

Conclusions

The present study reflects the initial stage of the Socialization of Lying Scale development. This measure makes a valuable contribution by offering a parenting measure that will help researchers in their efforts to understand the socialization of children's honesty and lying across various parenting domains and their associations with child behavior.

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Data availability statement

The data that support the findings of this study are available on request from the corresponding author, Victoria Talwar.

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